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THE MAGIC DIAL



The
SECRET
of Modern
Home Heating

W. S. Ray Manufacturing Co.
SAN FRANCISCO, CALIFORNIA

CHURCH
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LONDON



HERE are many people living today who, if they had been told thirty years ago that man would fly across the ocean, that they could talk to each other over miles of space, or listen to music in far away cities, would have given the prophet the "once over," and looked around for a convenient exit to conserve the time which they thought honestly would be absolutely wasted in discussing such matters with idle dreamers.

There are also many people today who, if they are told that it is absolutely unnecessary to build a fire, shovel coal, coke or wood or remove ashes, to maintain a fire for heating their home and that a small contrivance attached to the wall of their rooms would not only supervise this work, but do it so that the temperature will not vary from day to day more than a few degrees, would be more than likely to have similar impressions to those held by the citizen of a few years ago.

Nevertheless this, like the birdmen of today and the wireless phones that eliminate space, is an accomplished fact, and within the next decade the old antiquated methods of obtaining heat will be relegated to the status of the horse-drawn vehicle of yesterday, and the modern heating methods of burning oil will be installed in all new buildings as a standard unit, similar to the plumbing or electric light, with which we are now so familiar.

We are all of us more or less in a "rut," and too busy to very often climb up the side of the channel in which we run our daily lives, and peer over the side to see

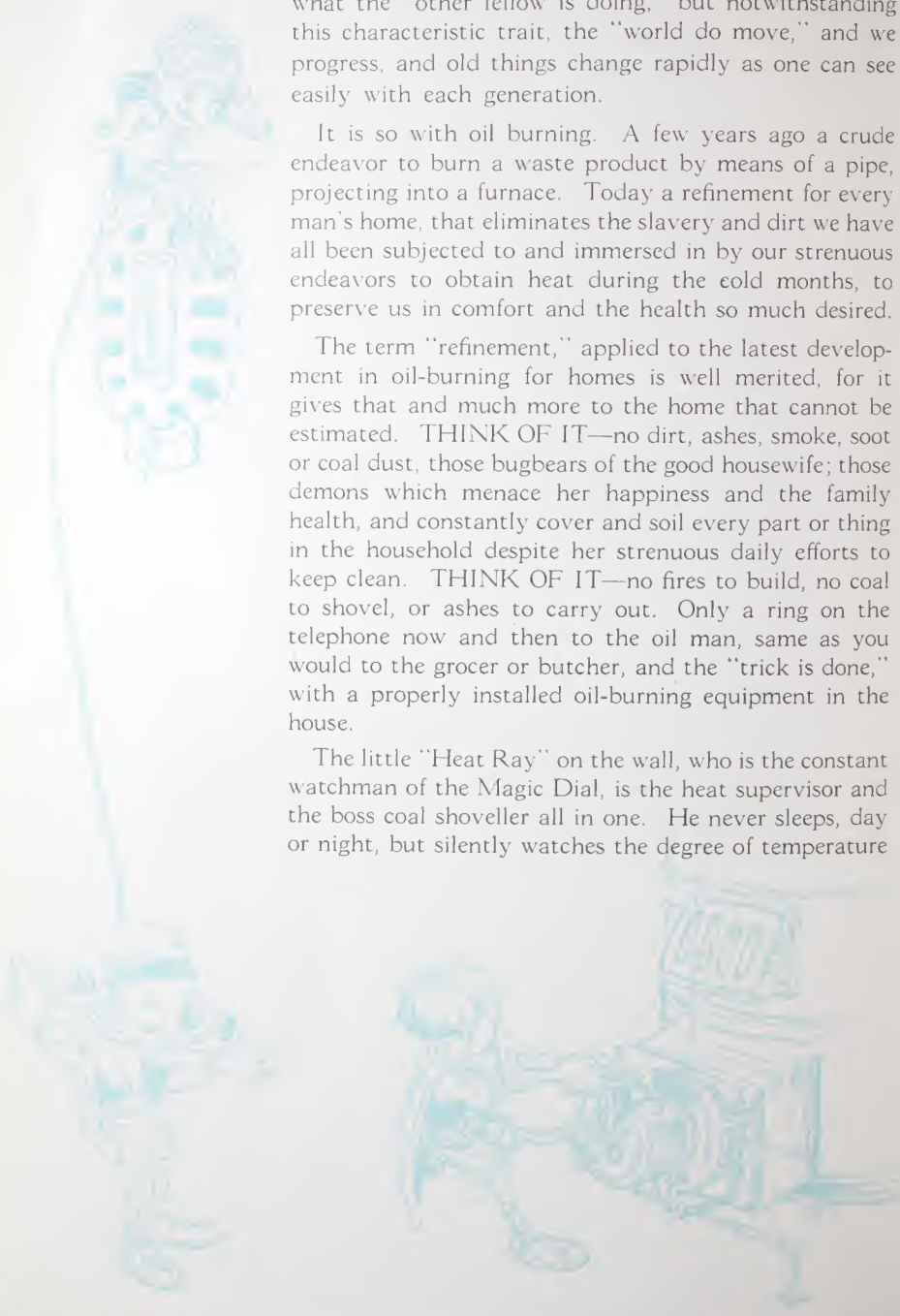
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what the "other fellow is doing," but notwithstanding this characteristic trait, the "world do move," and we progress, and old things change rapidly as one can see easily with each generation.

It is so with oil burning. A few years ago a crude endeavor to burn a waste product by means of a pipe, projecting into a furnace. Today a refinement for every man's home, that eliminates the slavery and dirt we have all been subjected to and immersed in by our strenuous endeavors to obtain heat during the cold months, to preserve us in comfort and the health so much desired.

The term "refinement," applied to the latest development in oil-burning for homes is well merited, for it gives that and much more to the home that cannot be estimated. THINK OF IT—no dirt, ashes, smoke, soot or coal dust, those bugbears of the good housewife; those demons which menace her happiness and the family health, and constantly cover and soil every part or thing in the household despite her strenuous daily efforts to keep clean. THINK OF IT—no fires to build, no coal to shovel, or ashes to carry out. Only a ring on the telephone now and then to the oil man, same as you would to the grocer or butcher, and the "trick is done," with a properly installed oil-burning equipment in the house.

The little "Heat Ray" on the wall, who is the constant watchman of the Magic Dial, is the heat supervisor and the boss coal shoveller all in one. He never sleeps, day or night, but silently watches the degree of temperature



in the house, which you desire to maintain, with a sense so acute that should it go below that wanted one or two degrees, he whispers quickly down to the other little "Heat Rays" in the basement: "More heat, brothers," and right quick they go to work and build a big fire and soon the temperature is brought back to the point desired, when he again whispers "we are now warm enough," and they let the fire die down and await the next call.

Seems queer, doesn't it, but it really is so, as many pioneers in the vanguard of progress have found out in the past year, to their everlasting satisfaction and joy. But that is not the **WHOLE SECRET** of its increasing popularity, it's the **PRICE** they have to pay for the **ELIMINATION OF TROUBLE, WORK, DIRT and DISEASE**. As a rule, it is considerably **LESS** than what it has cost them before with all the trouble, labor and dirt thrown in for good measure with the old method, if they live in a locality where fuel oil can be obtained at a reasonable price.

There are now many such localities, as the Oil Companies who have been quick to realize the worth of this new equipment and are providing ways and means to handle and sell oil at moderate prices to consumers.

This booklet is intended to introduce to you the baby brother of the other well-known "Rays" 10,000 strong, who are doing their bit "every day in every way in many lands," but it would not be amiss in these pages, since the small Ray is an

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exact duplicate of the larger in every way except in size, to mention that the Ray burners, since their introduction to the public in 1915, have gone all over the world and become internationally known for their dependability, efficiency, and economy in operation, as hundreds of testimonials will attest.

The purchaser of Ray domestic equipment need have no fear that he is demonstrating an untried article at his own expense, for a larger counterpart of his own Ray can be usually seen in operation in various buildings or industries in most any city of the United States and foreign countries.

The names of Ray purchasers read like the "Who's Who" in industry, as most of the nationally known manufacturing concerns, steamship companies, mining companies, the U. S. Government, states, cities and towns are on our list of owners of Ray equipment, varying from six to six hundred horse-power in size.

In the appendix are sheets showing in detail the various parts of this equipment as adapted for home use, together with specifications of the major and special electrical parts that go to make up this equipment, all of which is interesting to those who can understand these drawings and technical description.

The ordinary person, however, has neither the time nor the knowledge to analyze the operation or combustion efficiency of various oil-burning apparatus, and to such the knowledge that this small domestic house burner is a product of the Ray Manufacturing Company,

built on and after their experience in the production of about ten thousand previous machines, should give an assurance to them that the equipment is reliable in every way. The machines are covered by our guarantee to replace any defective part due to faulty workmanship at any time within one year. They can be installed with any type of hot air, hot water or steam boilers, and if the work is properly done, they will give a heat satisfaction that has not formerly been possible in small units.



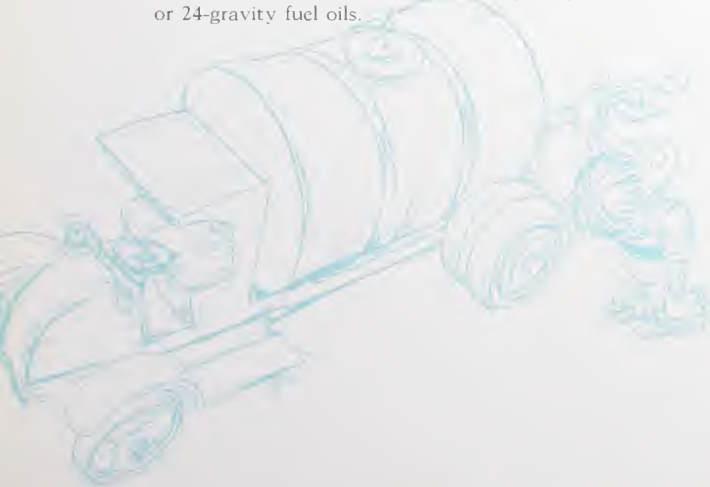
Ray Automatic Domestic Burner

How it Operates

- 1st. Oil for fuel.
- 2nd. Gas for ignition.
- 3rd. Electricity to control burner through a thermostat placed in any part of the house and to operate a fractional horse-power motor to complete the combustion.
- 4th. Means for controlling oil and air automatically by steam pressure or temperature of water in boiler.

Fuel

The Ray Burner is capable of burning 24-gravity oil or lighter oils. We recommend the use of low-grade fuels as they are invariably cheaper. With Ray equipment you can take advantage of the fuel market at all times, as they will burn oils ranging from 40-gravity kerosene or 24-gravity fuel oils.



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Combustion Chamber

The combustion chamber is of the proper size and design to give the utmost efficiency. It has a cast-iron bottom and is entirely lined with brick, which is the best refractory material known where high temperatures are maintained and which is necessary for complete combustion. Our furnace, as constructed, will outlast any other metallic or alloy combustion chambers.

Pilot Light

The pilot light is directly in front of the burner and is very accessible. A small flame is kept burning all the time and expands momentarily when the motor starts. It never fails to ignite the oil as our fuel is atomized and we do not have to depend on heat to gasify the incoming oil.

Atomizer

The fuel in the small burners is atomized by centrifugal force, similar in every respect to the large fuel oil burner, which we have manufactured for over seven years, during which time over 10,000 burners have been sold. The Ray principle of atomization is fundamental, and is fully protected by Ray Patents. Atomize the fuel—don't try to gasify it.

Motor

The motor is of Westinghouse manufacture, of one-eighth horse-power capacity. It is entirely enclosed and oil cooled. Furnished in 110V. AC. current only.

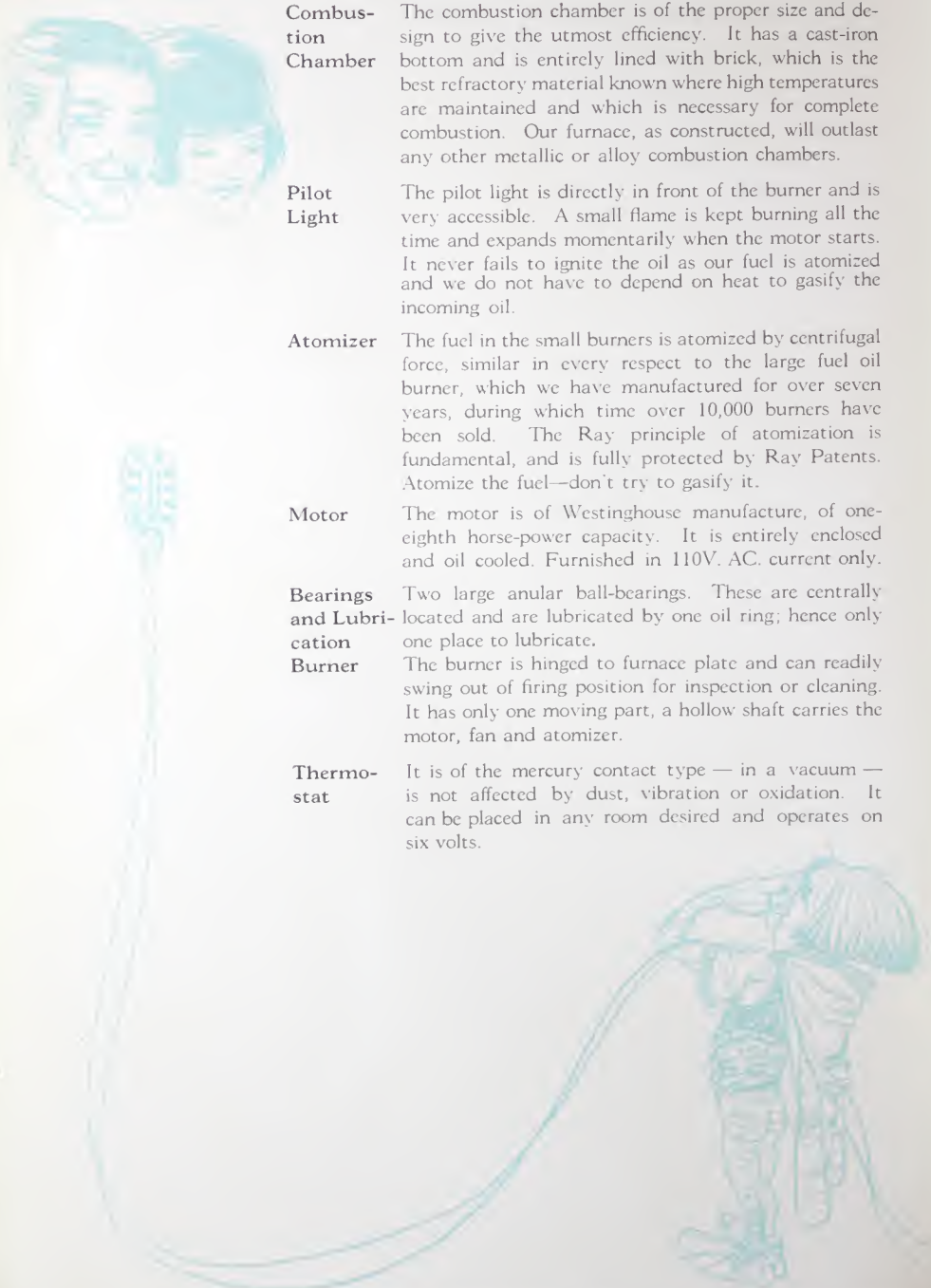
Bearings and Lubrication Burner

Two large anular ball-bearings. These are centrally located and are lubricated by one oil ring; hence only one place to lubricate.

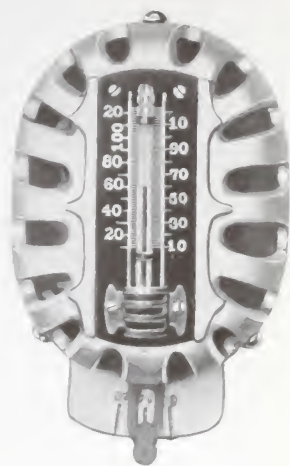
The burner is hinged to furnace plate and can readily swing out of firing position for inspection or cleaning. It has only one moving part, a hollow shaft carries the motor, fan and atomizer.

Thermostat

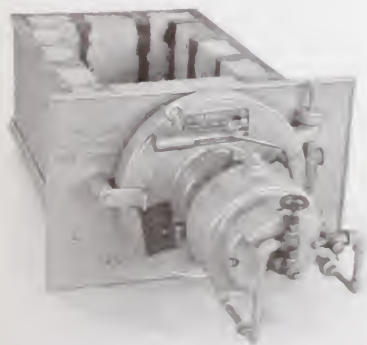
It is of the mercury contact type — in a vacuum — is not affected by dust, vibration or oxidation. It can be placed in any room desired and operates on six volts.



Relay Switch	It is of the mercury contact type, similar to thermostat, except is larger, a motor of one-quarter horse-power can be handled safely. A non-chattering relay operates this switch. Switch is mounted in metal box.
Safety Trip Valve	Is located in the main fuel line and if for any reason the fire should be extinguished the excess oil will drain back into bucket and trip the valve.
Magnetic Oil Valve	Opens when the motor circuit is closed and closes when current breaks.
Magnetic Gas Valve	Is electrically operated and is held open when motor is starting, so as to expand pilot light.
Cleanliness	Boiler rooms can be transformed into living rooms. Ray Burners will operate without soot, noise or smoke.
Fuel Storage	The Ray Automatic Baby Burner can be operated from a fifty-gallon gravity storage tank, or can be installed in conjunction with a small electrically driven pump. In either case we recommend the use of an outside storage tank of from 500 gallons to 1,000 gallons' capacity. These tanks can be installed near street or driveway, where same can be readily filled.
Flexibility	The Ray Oil Burner will burn as low as one quart of oil an hour up to its maximum capacity, with a high combustion efficiency throughout its range.
Sizes	The Ray Automatic Baby Burners are manufactured in two sizes, namely, 850 and 1500 feet of hot water radiation.
Types	The Ray Automatic Baby Burners are manufactured in two types, automatic and semi-automatic. The automatic is fully described in this pamphlet. The semi-automatic for those who desire a manual controlled equipment and for use where gas is not available for ignition. The semi-automatic type require lighting and extinguishing by hand. They are fitted with the automatic air and oil control, and safety trip valve.

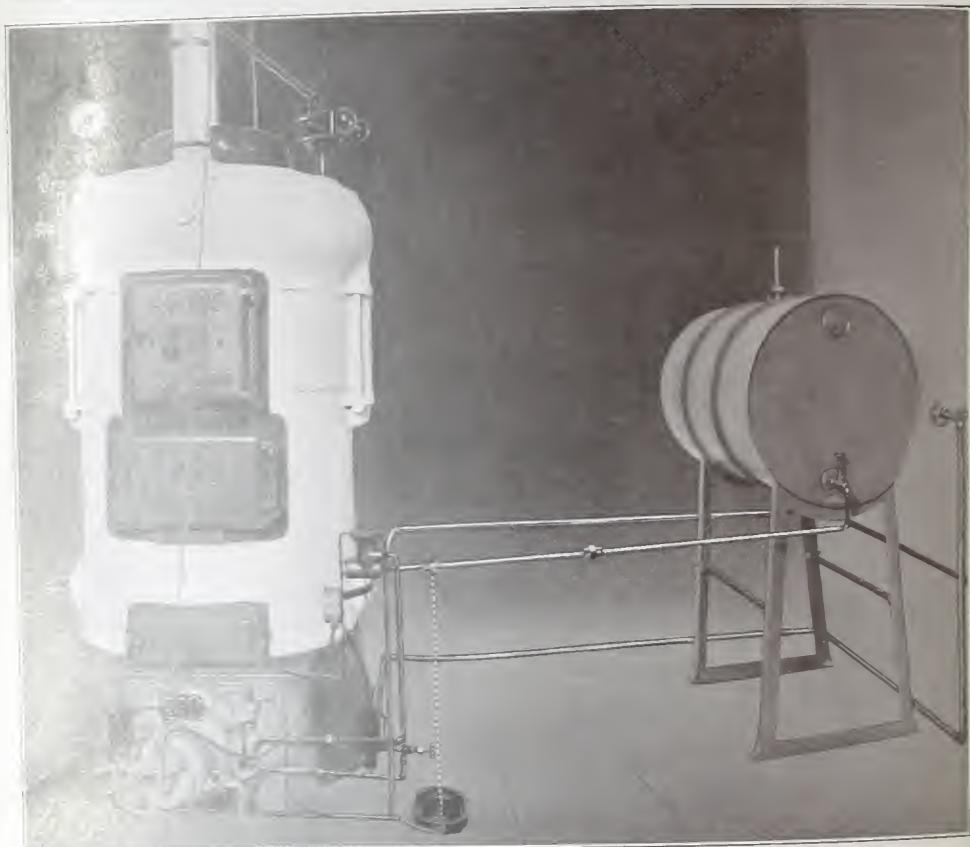


**The Magic Dial
Mercury
Thermostat**



Ray Baby Burner showing furnace which is integral with burner furnace is lined with Standard Fire Brick which will outlast any other type of furnace construction. Cut shows the semi-automatic type.

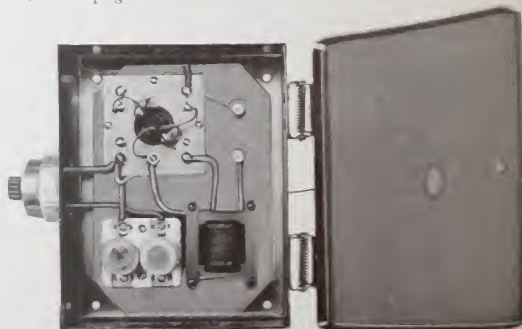
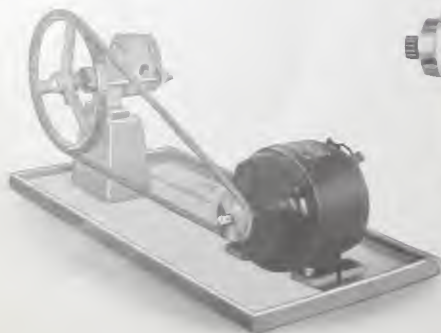
RAY AUTOMATIC DOMESTIC BURNER



Typical Residence Installation Ray Automatic Domestic Burner

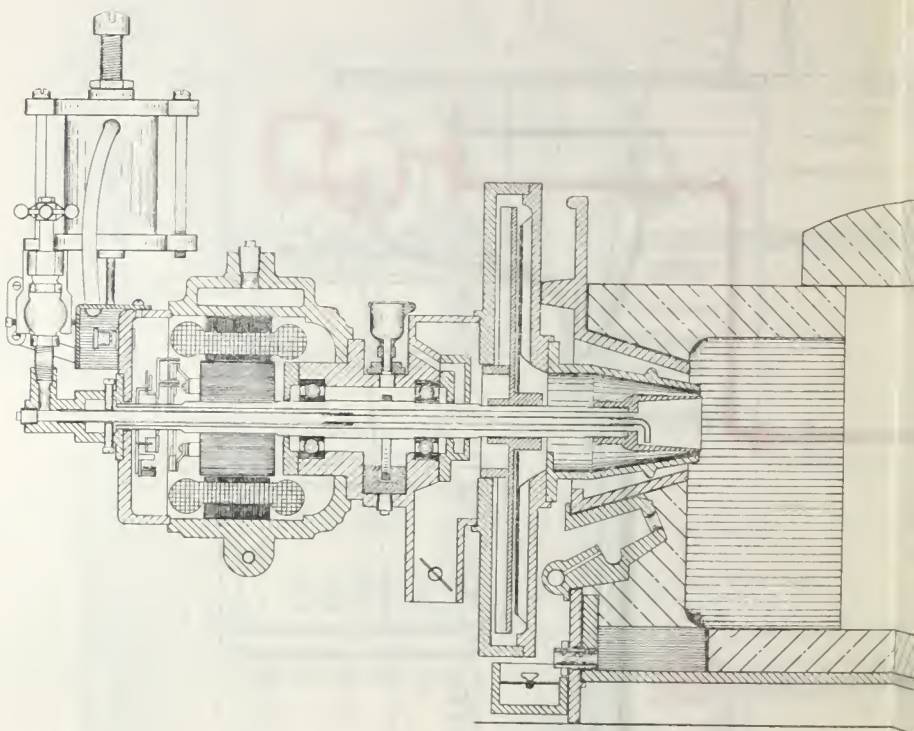
Full plans shown on next page — cut No. 2

Below — Motor driven Circulating Oil Pump used where oil is stored below burner level



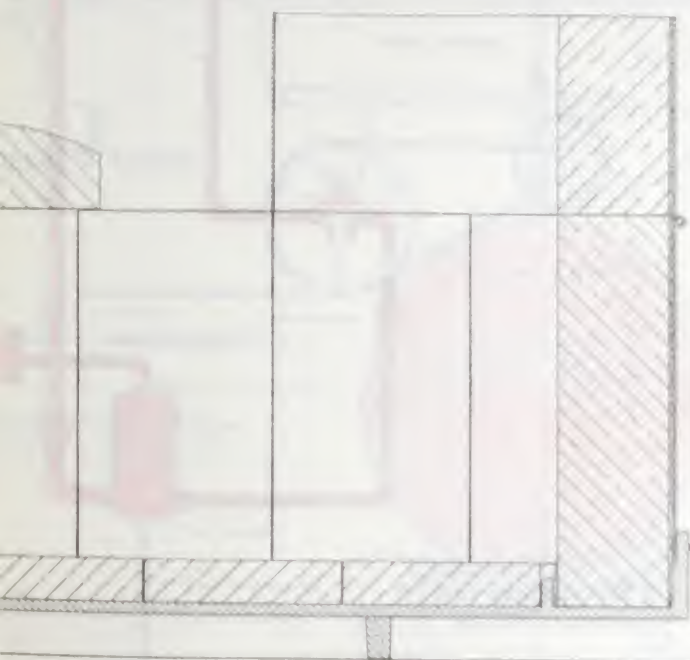
Type of Thermostat Safety Relay Switch used in Ray Installations — approved by National Board of Fire Underwriters.





Section thru Automatic Burner and Furnace. Note centrally located bearing. Oil cooled. Only one moving member which is centrally located. Furnace is entirely lined with fire brick.

Minimum furnace opening required.



showing totally enclosed motor,
with only one place to keep lubri-
carries motor, fan and atomizer.

is m. wide and 11 in. high.







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CITIES THROUGHOUT THE WORLD